U.S. Department of Transportation

Federal Aviation Administration

Memorandum

Subject:	Action: Review and Concurrence, Equivalent Level of Safety Finding for the Aviation Partners Boeing Winglet modification to a Model 737-300 FAA Project Number SA6508SE-T	Date:	July 11, 2002
		Reg Ref:	§25.103, 25.207
From:	Manager, Airplane and Flight Crew Interface Branch, ANM-111	Reply to Attn of:	Steve O'Neal Flight Test, ANM-160S
To:	Manager, Seattle Aircraft Certification Office, ANM-100S	ELOS Memo #:	SA6508SE-T-F-1

Background

The Aviation Partners Boeing (APB) winglet supplemental type certificate project for the Boeing 737-300 requires validation of the stall speeds for the modified (winglet equipped) airplane. It is the intent of APB that the stall speeds will be equal to, or better than, the stall speeds of the basic (unmodified) airplane. Unlike airplanes certified more recently, the stall speed basis for the original airplane was determined using the minimum speed in the stall (V_{min}) rather than the 1-g speed. APB proposes using a back to back comparison of the 1-g speeds of the basic and modified airplanes as a basis for validating that the minimum speed in the stall is unchanged. Demonstration of 1-g speed equivalence between the basic and unmodified airplanes will allow use of the original V_{min} stall speed basis and will allow use of the basic airplane flight manual during operation of the modified airplane.

Applicable regulation(s)

§§ 25.103, 25.207

Regulation(s) requiring an ELOS

§§ 25.103, 25.207

Description of compensating design features or alternative standards which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)

FAR §25.103 will be restated to require back-to-back demonstrations of $V_{s1\text{-}g}$ for both the basic and modified airplanes, and show that the resulting speeds for the modified airppane are equal to, or better than, the basic airplane. Successful demonstration will provide validation that the V_{min} stall speeds of the basic airplane are unchanged by the addition of winglets. Further, FAR §25.207 will be restated to require that the stall warning of the modified airplane not be degraded from that of the basic airplane. Successful demonstration will result in stall warning margins that are equal to, or better than, the unmodified airplane.

APB is not intending to take performance credit for any stall speed improvements that may be demonstrated, thereby providing additional margins over the current regulatory requirements, and over the basic recommended operating speeds

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

Compliance with the test criteria stated above will validate that stall speeds and stall warning of the modified airplane are unchanged relative to the basic airplane, and use of the current AFM operating speeds will result in safe operation of the airplane.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding in issue paper F-1. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrival of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section (TC's & ATC's) or on page 3 of the STC Certificate.
[E.g. Equivalent Safety Findings have been made for the following regulations:
§25.103 Stalling Speed (documented in TAD ELOS Memo SA5884SE-T-F-1)
§25.207 Stall Warning (documented in TAD ELOS Memo SA5884SE-T-F-1)]

/Original signed by Don Stimson/	7/11/02
Manager, Airplane and Flight Crew Interface Branch, ANM-111	Date

ELOS Originated by Seattle ACO:	Project Engineer Steve O'Neal	Routing Symbol ANM-160S